

This Listing of Claims will replace all prior versions, and listings of claims in this application.

**Amendments to the claims:**

Claim 1 (currently amended) A method for making a chimeric ungulate comprising:

- (a) introducing at least one ~~an~~ ungulate embryonic stem cell from a cultured ungulate embryonic stem cell line, wherein said cells grow in multilayers and wherein said embryonic stem cells have a rounded shape as observed with the light microscope, a diameter of approximately 8-15 microns, and a cytoplasmic to nuclear diameter ratio of approximately 10-25; 75-90 as show in FIG. 2, wherein the ratio is approximated by the cyt oplasmic diameter from the periphery of the nucleus to the end of the cell, to the diameter of the nucleus, and ~~that~~ said cell has a first genetic complement, into a recipient embryo of the same species as the embryonic stem cell, said recipient embryo having a second genetic complement which differs from the first genetic complement, in at least one gene, to form a chimeric ungulate embryo; and
- (b) placing the chimeric ungulate embryo in an environment suitable for the completion of development to form a chimeric ungulate.

Claim 2 (original) The method of claim 1, within the ungulate embryonic stem cell is pluripotent.

Claim 3 (cancelled).

Claim 4 (original) The method of claim 1, wherein the embryonic stem cell is introduced into the embryo at a pre-implantation stage.

Claim 5 (original) The method of claim 4, wherein the pre-implantation stage is the blastocyst stage.

Claim 6 (original) The method of claim 1, wherein the embryonic stem cell is derived from a first breed of ungulate and the recipient embryo is derived from a second breed of the same species as the first breed.

Claim 7 (canceled)

Claim 8 (canceled)

Claim 9 (cancelled)

Claim 10 (currently amended) The method of claim 1, 9 wherein the first genetic complement comprises an exogenous nucleotide sequence stably integrated into the genetic complement of the embryonic stem cell by cell line transformation.

Claim 11 (original) The method of claim 10, wherein the first genetic complement comprises a nucleotide sequence capable of being expressed to provide human Factor IX in recoverable form from the chimeric ungulate.

Claim 12 (original) The method of claim 10, wherein the first genetic complement comprises a nucleotide sequence encoding a protein selected from the group consisting of human blood proteins, human hormones, human growth factors, human cytokines, human enzymes human hormone receptors, human binding proteins, antigens, translation factors, transcription factors, onco-proteins, protooncoproteins, human milk proteins, and human muscle proteins.

Claim 13 (canceled)

Claim 14 (withdrawn) A chimeric ungulate produced according to the method of any one of claims 1 through 13.

Claim 15 (canceled)

Claim 16 (canceled).

Claim 17 (canceled)

Claim 18 (canceled)

Claim 19 (canceled)

Claim 20 (canceled)

Claim 21 (canceled)

Claim 22 (withdrawn) An embryonic ungulate stem cell isolated from a culture made in accordance with claim 15.

Claim 23 (withdrawn) A method of making transgenic ungulate, said method comprising transferring a nucleus from the cell of claim 22 into an ungulate recipient cell from which an embryo develops.

Claim 24 (withdrawn) The method of claim 23, wherein the recipient cell is an enucleated ungulate ovum.

Claim 25 (withdrawn) The method of claim 23, wherein the recipient cell is an enucleated ungulate embryonic cell.

Claim 26 (withdrawn) The isolated ungulate cell of claim 22 which is totipotent.

Claim 27 (withdrawn) A culture initiated from the stem cell of claim 26.

Claim 28 (withdrawn) A stable cell line derived by subculturing the culture of claim 27.

Claim 29 (withdrawn) The embryonic ungulate stem cell of claim 22 which has a genetic complement comprising the complement of the ungulate source of the stem cell and an exogenous nucleotide sequence stably integrated into said complement.

Claim 30 (withdrawn) The embryonic ungulate stem cell of claim 29, wherein the exogenous nucleotide sequence encodes a selectable marker.

Claim 31 (withdrawn) The embryonic cell of claim 30, wherein the selectable marker comprises (Hph), puromycin (Pac), neo, ada and dhFR.

Claim 32 (withdrawn) A transgenic ungulate descended from a chimeric ungulate of claim 14.

Claim 33 (withdrawn) A method of making an ungulate from which tissues can be used as a xenograft, said method comprising:

(a) incorporating the genetic complement from the embryonic ungulate stem cell of claim 22 into a host ungulate embryonic cell, to form a chimeric ungulate wherein said genetic complement renders tissue form a chimeric ungulate histocompatible with a recipient for the xenograft: and

(b) breeding the chimeric ungulate to form an offspring ungulate which includes the tissues for the xenograft.

Claim 34 (withdrawn) The method of claim 33, wherein the offspring ungulate is a transgenic ungulate.

Claim 35 (withdrawn) A method of using a transgenic ungulate of claim 32 to produce an exogenous protein, said transgenic ungulate having a genetic complement which comprises a nucleotide sequence capable of providing said exogenous protein, said method comprising exposing said ungulate to conditions wherein the nucleotide sequence is activated to provide said exogenous protein in a recoverable form in an ungulate body fluid or tissue, and recovering said protein from said body fluid or tissues.

Claim 36 (withdrawn) The method of claim 35, wherein the body fluid is milk secreted from a female ungulate.

Claim 37 (withdrawn) The method of claim 35, wherein the exogenous protein is selected from the group consisting of TNF $\alpha$ , human growth factor, a human peptide hormones, an ungulate growth factor, and an ungulate milk protein.

Claims 38 (withdrawn) The method of claim 37 wherein the growth factor is EGF.

Claim 39 (withdrawn) An isolated embryonic stem cell from an ungulate.

Claim 40 (withdrawn) The embryonic stem cell of claim 39, wherein the cell is totipotent.

Claim 41 (withdrawn) The embryonic stem cell of claim 39, which is negative when assayed for the presence of a structural protein which is only present in a differentiated cell.

Claim 42 (withdrawn) The embryonic cell of claim 41, wherein the structural protein in cytokeratin 18 or vimentin.

Claim 43 (withdrawn) The embryonic cell of claim 39, which is negative when assayed for the presence of an antigen which is only present in a differentiated cell.

Claim 44 (withdrawn) The embryonic stem cell of claim 43, wherein the antigen is a neurofilament, a glial fibrillar acidic protein, keratin or desmin.

Claim 45 (withdrawn) The embryonic stem cell of claim 44, wherein the neurofilament is a protein with a molecular weight of 68, 160 or 200 kd.

Claim 46 (withdrawn) The embryonic stem cell of claim 39, which has a rounded shape as observed with the light microscope, a diameter of approximately 8-15 microns, and a cytoplasmic to nuclear diameter ratio of approximately 1-25: 75-90.

Claim 47 (withdrawn) The embryonic stem cell of claim 39, which in a stable culture exhibits multilayered growth on a solid surface and a doubling time of approximately 18-36 hours.

Claim 48 (withdrawn) The embryonic stem cell of claim 39, wherein the cell is capable of forming a teratoma or a teratocarcinoma when introduced into an immunodeficient host animal.

Claim 49 (withdrawn) The embryonic stem cell of claim 39, wherein the source of the cell is an embryo of a swine line selected from the group consisting of Meishan, Duroc and Yorkshire.

Claim 50 (withdrawn) The embryonic stem cell of claim 39, wherein the cell is capable of producing a chimeric swine when said cell is introduced into a recipient embryo.

Claim 51 (withdrawn) The embryonic stem cell of claim 50, wherein the recipient embryo is derived from a swine line selected from the group consisting of Meishan, Duroc and Yorkshire.

Claim 52 (withdrawn) The embryonic stem cell of claim 39, wherein said cell has a genetic complement comprising the complement of the ungulate of the embryo source of the stem cell and an exogenous nucleotide sequence stably integrated into said complement.

Claim 53 (withdrawn) The embryonic stem cell of claim 52, wherein the exogenous nucleotide sequence is capable of being expressed to provide a protein in recoverable form from a host ungulate which comprises in its genetic complement, the complement of the embryonic stem cell.

Claim 54 (withdrawn) The embryonic stem cell of claim 52, wherein the exogenous nucleotide sequence encodes a protein selected from the group consisting of blood proteins, hormones, growth factors, immune system regulatory factors, cytokines, enzymes, hormone receptors, binding proteins, antigens, translation factors, transcription factors, onco-proteins, protooncoproteins, milk proteins and muscle proteins.

Claim 55 (withdrawn) The embryonic stem cell of claim 54, wherein the nucleotide sequence encodes a human protein.

Claim 56 (withdrawn) A cell line initiated from the embryonic stem cell of claim 39.

Claim 57 (withdrawn) A stable cell line initiated from a culture of embryonic stem cells.

Claim 58 (withdrawn) The cell line of claim 57 which is a clonal line.

Claim 59 (withdrawn) The cell line of claim 57 which grows in a multilayer rather than a monolayer when cultured on a solid surface and has a doubling time of approximately 18-36 hours.

Claim 60 (withdrawn) The cell line of claim 57, wherein a cell isolated from the line has a round shape, as observed with the light microscope, a diameter of approximately 8-15 microns, and a cytoplasmic to nuclear diameter ratio of approximately 10-25: 75-90.

Claim 61 (withdrawn) The cell line of claim 57, which is negative when assayed for the presence of a structural protein which is only present in a differentiated cell.

Claim 62 (withdrawn) The cline of claim 61, wherein the structural protein is cytokeratin 18 or a vimentin.

Claim 63 (withdrawn) The cell line of claim 57, which is negative when assayed for the presence of an antigen which is only present in a differentiated cell.

Claim 64 (withdrawn) The cell line of claim 63, wherein the antigen is a neurofilament, a glial fibrillar acidic protein, keratin or desmin.

Claim 65 (withdrawn) The cell line of claim 64, wherein the neurofilament is a protein with a molecular weight of 68, 160 or 200 kd.

Claims 66 (withdrawn) The cell line of claim 56 designated D195.

Claim 67 (withdrawn) The cell line of claim 56 designated M1192.

Claim 68 (withdrawn) An embryo comprising the cell of claim 39.

Claim 69 (withdrawn) A clone of swine embryos derived from the embryo of claim 68.

Claim 70 (withdrawn) A chimeric swine embryo comprising a cell derived from a swine embryonic stem cell.

Claim 71 (withdrawn) An embryo of an ungulate made by the process comprising transfer of a nucleus of an isolated embryonic stem cell into a recipient cell from the same species as the embryonic stem cell

Claim 72 (withdrawn) The embryo of claim 71, wherein the recipient cell is an enucleated embryonic cell.

Claim 73 (withdrawn) The embryo of claim 71, wherein the recipient cell is an enucleated ovum.

Claim 74 (withdrawn) An embryo cloned from the embryo of claim 71.

Claim 75 (withdrawn) An embryo of claim 68 or 71, which comprises an exogenous nucleotide sequence stably integrated into its genetic complement.

Claim 76 (withdrawn) An isolated nucleus of an embryonic stem cell from an ungulate.

Claim 77 (withdrawn) Progeny of the chimeric ungulate of claim 14.

Claim 78 (canceled)

Claim 79 (canceled)



No fees are believed due at this time, however, please charge any additional deficiencies or credit any overpayments to deposit account number 12-0913 with reference to our attorney docket number (21419/90114).

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Alice O. Martin', written in a cursive style.

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